

**If You're Not Proficient At It, Why Fly In It For Practice?**



# **SIMULATION**

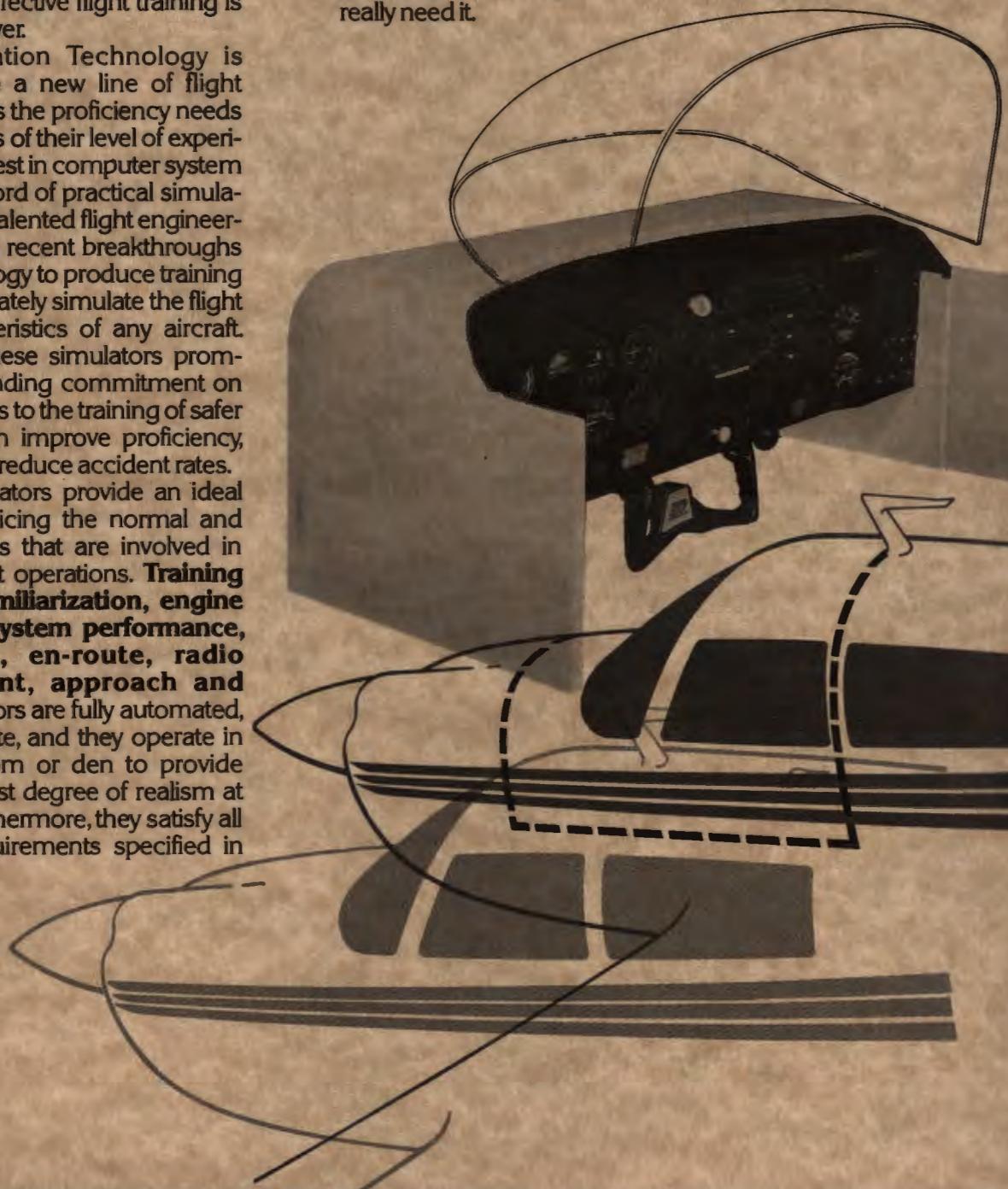
**The Answer To A Pilot's  
Quest For A New Measure  
Of Competence**

# The World of General Aviation is Changing...

Even the most experienced pilots require regular training. Whether they fly professionally in the complex world of military and commercial aviation or simply take pleasure from an occasional flight in a single-engine airplane, they all have one thing in common—the need to stay sharp. Faced with the rapid increase in the volume of air traffic, the growing sophistication of flying techniques and the challenge of fuel conservation, today's professional and private pilots alike recognize that competent, cost-effective flight training is more important than ever.

Aviation Simulation Technology is pleased to announce a new line of flight simulators that answers the proficiency needs of ALL pilots, regardless of their level of experience. Combining the best in computer system engineering with a record of practical simulation experience, AST's talented flight engineering team has exploited recent breakthroughs in microcircuit technology to produce training systems that can accurately simulate the flight and handling characteristics of any aircraft. The introduction of these simulators promises to fulfill a longstanding commitment on the part of its developers to the training of safer pilots by helping them improve proficiency, maintain currency, and reduce accident rates.

AST Flight Simulators provide an ideal environment for practicing the normal and emergency procedures that are involved in both ground and flight operations. **Training includes cockpit familiarization, engine operation, control system performance, takeoff, climbout, en-route, radio navigation, descent, approach and landing.** AST Simulators are fully automated, they are highly accurate, and they operate in the safety of classroom or den to provide training with the highest degree of realism at absolutely no risk. Furthermore, they satisfy all the performance requirements specified in FAA regulations.



As you will see in the following pages, realistic flight simulation offers a sensible, cost-effective way toward the finest in basic and advanced operational training, and periodic qualification. It also offers an excellent way to make more efficient use of fuel, aviation's most precious resource, so that there will always be enough for the times when we really need it.

## Accidents – Most of Them are Caused By Pilot Error ... A Combination of Many Factors Under Stress.

A proficient pilot can normally handle a single in-flight emergency in a routine manner. However, when an emergency is compounded by unexpected weather changes, mechanical problems, or maybe just a difficult maneuver that he hasn't performed often enough, the situation can become critical and safety of flight can be compromised...unless he is trained to deal with it.

Unfortunately, practicing compound emergencies in an aircraft has never proven to be very practical. Many instructors agree that the airplane is actually a poor teaching platform, with the concentration of both student and instructor continually interrupted by operational demands that have nothing to do with the maneuver or procedure being taught. In fact, studies have shown that under in-flight conditions, students' retention levels are actually less than 25 percent. In a simulator, on the other hand, the student has no problem devoting his undivided attention to the details of the lesson.

## With Simulator Training It's Easy to Visualize a Troublesome Situation.

Imagine, for a moment, what it would be like if an instructor could "freeze" an approach, at its most critical point, for purposes of discussion. In an airplane it's impossible...in an AST Flight Simulator it's as simple as flicking a switch. That's right, a flick of a switch! That's all it takes for pilot or instructor to literally "freeze" any situation or repeat it as often as desired, for a relaxed "what happened" evaluation. The ability to simulate emergencies in such a unique manner gives pilots the opportunity to learn in a complex flight environment while they are safely on the ground.

## Train, Check, Retrain and Practice ... It's the Only Way For a Pilot to Maintain Flight Proficiency and Meet the Demands of Today's Flying Environment.

Shooting an ILS approach doesn't have to be difficult, but it can be if it hasn't been practiced or even attempted recently. Pilot proficiency can deteriorate for lots of reasons. It can happen from not flying for extended periods...from not staying current...or simply

from lack of refresher training. Pilots aren't any different than anybody else whose skills require regular practice. When they fail to do it, they have a tendency to forget, and when that happens, performance suffers.

## An AST Simulator Makes Learning Easier Than You Think!

Any pilot can sit down and fly an AST Flight Simulator without previous instruction. Using the pre-programmed series of AST training courses, he can sit before a duplicate of a real instrument panel and practice in-flight procedures in the same sequence as they occur in the airplane. Realism is further enhanced by pre-programmed **navigation stations**, contoured to his particular area, which when combined with the use of **en-route charts** and **approach plates**, **recorded tower communications** and **taped flight instruction courses**, allow the pilot to practice exactly what he needs, to achieve a higher degree of proficiency and currency. The result: improved confidence and greater flying enjoyment.

## Military and Airline Pilots Have Proven the Value of Flight Simulators as a Teaching and Training Aid.

One of the reasons a General Aviation pilot often is not able to maintain the same level of proficiency and currency as his professional counterparts is that he hasn't had the same regular exposure to high fidelity flight simulators. Before a military or airline pilot flies a sophisticated, high performance aircraft, he spends many hours learning procedures and practicing emergencies in a simulator that duplicates the cockpit environment and performance features of the aircraft. And even though he achieves the highest possible skill level through a continuing exposure to all aspects of the aviation environment, he returns regularly to the simulator for his currency training. The professionals know that regular use of flight simulators, and the accompanying training program, results in an improved safety record and attendant economic benefits. With an AST Flight Simulator, the same advantages can be yours.

# Flying is a Valuable Skill... AST Flight Simulators Improve That Skill

## For Corporate and Commuter Airline Pilots...

Operators who fly complex sophisticated airplanes for a living have acknowledged their faith in the flight simulator as a training tool by their willingness to continually underwrite their pilots' initial and recurring training at flight education centers, where simulator training is virtually the backbone of the curriculum.

Now, these operators can supplement their pilots' training requirements in-house with their own AST Flight Simulators. And what's more, operators who are not subscribers to outside training organizations can use AST Simulators to establish their own complete in-house training programs.

A broad range of AST Flight Simulators is available to Corporate and Commuter Airline operators, ranging from basic trainers to sophisticated twin engine simulators with visual presentation and instructor's control console. AST Simulators can be used for practicing maneuvers and procedures, with all types of emergencies simulated by the instructor from a remote station. Any in-flight situation can be frozen at a critical point for review, before the flight is resumed. These simulators can also be used for currency training, six month checks, route checks and upgrading. Time can be credited in accordance with new FARs.

Flight crews will find AST Simulators particularly valuable for practicing approaches into airports they have never flown into before. All types of approaches can be flown with the use of Jeppesen or NOS approach plates.

Pre-programmed memory cassettes are available covering areas approximately 200 x 200 nautical miles and containing all major navigational and airport approach facilities. Simulated approaches can be made down to field elevation. In the case of an ILS approach, the actual ILS and outer marker frequencies are selected on the radios and identified. The localizer and glide slope have the identical characteristics of the facility, including heading and degree of descent. With the visual display, ceiling heights can be set at the minimum descent altitude or decision height for a particular facility, or at any pre-determined height.

The simulator can also be used for practicing new or revised ATC procedures as they are introduced by the FAA for specific facilities.



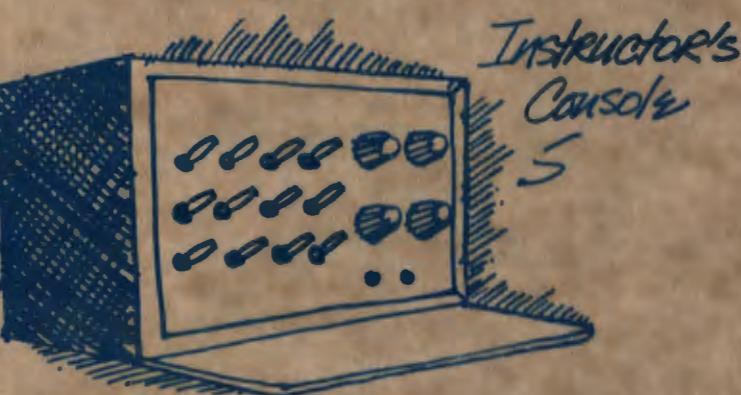
## In Flight Schools...

Good pilots don't just happen. They are thoroughly and properly trained at many of the approved flight schools throughout the country. Unfortunately, there are many individuals who drop out before they finish training, while others stop flying after they have earned their certificates. Whatever the reason, the failure of new pilots to continue can result in a lack of confidence...and a lack of business.

If flight schools are to maintain and increase their share of the flight training market, they must convince prospective pilots that their school utilizes the best equipment and that their instructors are well qualified. AST Flight Simulators and Training Courses can increase student completions by helping instructors teach and helping students develop confidence.

The AST Training System follows proven methods of flight education in an interesting, practical and professional manner to dramatically increase student retention. The AST Flight Simulator, which is an integral part of the System, improves the quality of flight training, upgrades ground school facilities and generates more profits regardless of the weather. That's why many schools demonstrate their insistence on excellence by using advanced simulators in their programs.

An approved flight school can make excellent use of AST Flight Simulators in preparing students for Private and Commercial Certificates as well as the Instrument and Multi-Engine Ratings. The relatively low cost of this kind of training will attract many students who otherwise could not afford to become pilots or upgrade their proficiency. And because they are lightweight and portable, AST Simulators can be rented by the hour, course or weekend.



## For Private/Commercial/Instrument/Multi-Engine Pilots

The AST Simulator is the convenient answer for pilots applying for Private and Commercial Certificates as well as Instrument and Multi-engine ratings. Since it meets the FAA requirements, a large part of the required flight time can be logged in the Simulator, especially when upgrading to an Instrument Rating. For example, with simulator training, a pilot could get a private license in a total of 40 hours instead of the average 65 hours, or an instrument rating in 40 hours instead of the average 90 hours.

AST Simulator training also fills the many requirements for IFR currency techniques — or for general VFR practice work between flights. All you need is a 4 foot by 3 foot area and an ordinary electrical outlet, and you can train and practice in a simulator anywhere, anytime, regardless of weather. For sheer convenience, AST Simulators are the best way to fly! They can be installed anywhere — home, local flying club, office — miles from the nearest airport.

## Simulator Practice Guarantees the Lowest Cost Life Assurance for Both Plane and Pilot.

It's easy... safe... economical... convenient.

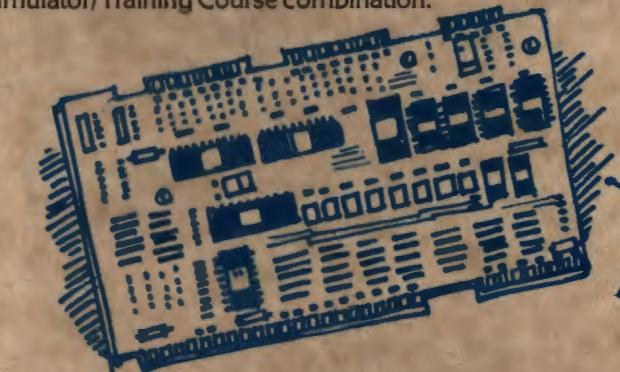
Simulator training is expensive only when an aircraft is used to simulate a simulator. No that's not a misprint! We mean exactly what we're saying, because that's what happens when you use an airplane to do the things a simulator should be doing.

Flight instruction and practice cost money. At a minimum, you need an airplane, a flight instructor (or safety pilot), a traffic controller, and plenty of gasoline. And at that, you might still end up sitting on the ground waiting for the weather to clear. It all adds up to a lot of money and a lot of time...time that could be spent more efficiently and profitably.

AST's new line of flight simulators provides every pilot, regardless of experience, with a comprehensive training program, tailored to his needs and finances. AST flight simulators can be used regularly, regardless of weather, to shorten training time and drastically reduce training cost, when compared with the use of an actual aircraft.

**AST Courseware...A Learning Process that Makes Sense.** The educational techniques used in AST's programmed learning approach practically guarantee fast, easy comprehension and retention. The curriculum includes private, commercial, instrument and multi-engine courses. Text books, containing ground school information and color illustrations, are used together with AST's specially prepared flight instruction tapes to give pilots step by step lessons, taught exactly as they would be in an airplane. Material is designed such that it can be coordinated, on a chapter by chapter basis, with subjects presented in established, well known pilot training courses.

**Outstanding Training on the Ground.** For pilots who want to maintain proficiency AST Currency Courses offer a variety of flights with a wide range of complexities. Included are multi-approaches, navigation problems and emergencies, as well as a regular cross-country flight. Taped scenarios, including communication with the tower and enroute controllers, further enhance the realism afforded by the lessons. The courses make effective use of the AST Simulator's unique pre-programmed navigation stations, contoured to any desired area. This feature allows you to practice training flights that are tailored for your individual needs and thus continue to upgrade your training skills through the years. AST's training courses can be used to adapt the simulator to many different applications. Whether you are a private, commercial or instructor pilot, there is something for everyone in the versatile AST Simulator/Training Course combination.



## World's Safest Training Aircraft.

AST's new computerized line of simulators — the Models 300X, 201X, 300 and 201 — brings you the most advanced, economical flight training available.

Aviation Simulation Technology has designed a new line of cost effective computerized flight simulators to help meet increasing training requirements in the face of the rising costs of fuel and aircraft maintenance. And we will continue to develop simulators to parallel the aircraft being used now and in the future.

**Scope of Simulation.** Each simulator provides a very extensive scope of simulation of static, dynamic, and power-plant performance, and handling characteristics of the aircraft in flight and on the ground procedures. It covers simulation of the flight characteristics, control loading and the performance and functions of engine, aircraft, radio navigation and communication systems.

## Why the AST Simulator?

After reviewing the features and specifications of the Models 300X, 201X, 300 and 201, there is just one way to judge a good simulator. The keys are waiting!

## Models 300X and 201X

Ideal for Commuter Airline, Corporate and Flight School.

Our top of the line twin engine model 300X and single engine model 201X have all the characteristics of a twin-engine and single-engine aircraft with all the capabilities for advanced simulation. These simulators consist of a flight compartment, an instructor's console, an external plotting aid, and a built-in digital computer with associated equipment.

Each of these models is a complete simulator with all options including base with rudder, cockpit enclosure, plotter, visual display, instructor's console, additional programming cassettes, taped flight instruction courses, extended warranty, installation and training.

- a. The cockpit is a reproduction of the aircraft.
- b. The instructor station consists of a portable panel. The instructor console has controls for insertion of malfunctions and failures during training.
- c. The tracking station consists of an operator console and a tracking recorder. The cross-country and approach plots are recorded automatically on the X-Y plotter.

## Models 300 and 201

The model 300 is the basic twin-engine simulator. The model 201 is the basic single-engine simulator. Both have all the characteristics of a high performance single-engine aircraft and all of the capabilities for advanced simulation. They are designed for use with optional base and floor mounted rudders, and windshield enclosure.

# An Efficient New Design for Safety-Minded Pilots

## Tomorrow's Features, Today

### General Features

- A high-speed digital computer performs tasks for simulation within the computer, providing a high degree of simulation accuracy.
- Standardized solid state circuits contribute to increased reliability and easy maintenance.
- A modular program and interface design contribute to versatile use of the computer and easy maintenance.
- Navigation aids and facilities are simulated and all data concerning these station aids and facilities are stored in the computer.
- Simulator and enclosure reproduces actual aircraft cockpit.
- No special instructions are required to fly the simulator. Operating procedures from engine start to shutdown are identical to aircraft.

### Flight Dynamics

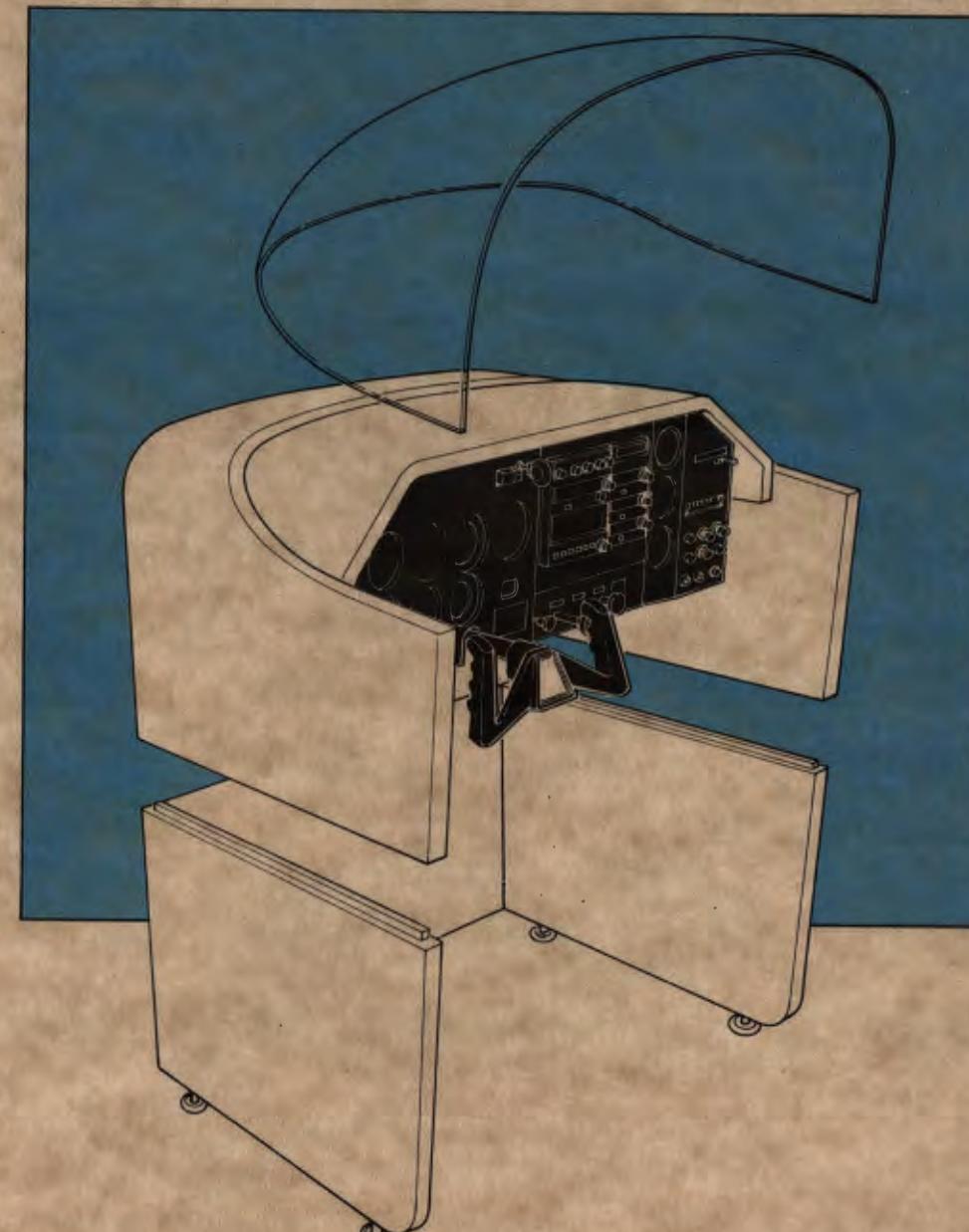
- Realistic in-flight forces on control column and rudders.
- Aileron and elevator effectiveness change with airspeed.
- Yoke pressures responsive to elevator trim changes.
- Lowering of flaps reduces cruise speed.
- Lowering of gear reduces cruise speed.
- Landing gear operation includes time sequence, in transit and position indications.
- Rate of turn proportional to angle of bank.
- Rate of turn inversely related to airspeed.
- Ground effect computed on takeoff and landing.
- Stall speed changes with flap position.
- Stalls computed on angle of attack.
- Lift computed on airspeed, angle of attack and angle of bank.
- Adverse yaw computed.
- Power vs airspeed allow flight conditions "behind power curve."
- D.G. has random precession.
- Fully functional altimeter settings.
- Functional brake system.

### Engine Features

- Engine start and restart sequences in-flight and on-ground.
- All engine temperature and pressures are simulated.
- Independent engine feathering.
- Torque effect on rudder during engine out procedures.
- Manifold pressure gauges functional under all conditions including feathering and altitude changes.
- Engine sound permits synchronizing.
- Dual fuel tanks with memory.
- Fuel burn off proportional to power.
- Turbulence effects flight characteristics.

### Navigation Features

- Latest digital COM and NAV equipment with memory features.
- Thirty-two stations stored in geographical memory cassette cartridges.
- Computer generated actual COM and NAV frequencies and identifier codes. No special programming required.



### Support Features

- Computer stores fixes exactly duplicate location of NAV stations, outer marker beacons, and compass locators.
- Independent selection of NAV stations allows actual enroute navigation including cross bearings, holding patterns and intersections.
- Actual Sectional charts, or NOS or Jeppesen Low Altitude Enroute charts and approach plates can be used for navigations and approaches.
- Wind entered digitally from 0-360 degrees and 0-99 knots.
- Wind effects ground speed and navigational tracking.
- Position computed by micro-computer to precision of ten feet in area of 200 by 200 nautical miles.
- Each airport altitude stored in memory.
- Initializing button allows flight to start at any airport or NAV facility in memory.
- Flight Plotter: Automatic map plotting with improved accuracy eliminates the usual discrepancies between printed or projected maps and the plotted flightpath.
- Tracks directly on actual Sectional, Low altitude enroute charts or on plain paper.
- Expanded scale plotting for precise study of flight paths ( $1'' = 1/2$  mile).
- Plotter automatically starts when flight within pre-selected range.
- Plotting paper held to plotter by vacuum.
- Easy plotter pen replacement.
- Instructor console allows instructor to remotely fail any flight, navigation or engine instrument.
- Full instruction tapes designed to correlate with standard training syllabus.
- Flight and navigation hold freezes flight for analysis.

### Engine

- Ignition Switch
- Throttle
- Mixture Control
- Propeller Control
- Manifold Pressure Gauge
- Tachometer
- Gauges
  - Fuel Quantity
  - Fuel Pressure
  - Oil Pressure
  - Oil Temperature
  - Cylinder Head Temperature

### Flight

- Clock
- Turn Coordinator
- Airspeed Indicator
- Altitude Indicator
- Compass
- Directional Gyro
- Altimeter
- Vertical Speed Indicator
- Landing Gear Switch
- Landing Gear Indicator
- Flap Switch
- Flap Indicator
- Master Switch
- Master Radio Switch
- Elevator Trim
- Rudder Trim
- Hand Brake
- Control Column
- Hobbs Meter

### Avionics

- Radio master switch
- 2-720 Channel Digital COM Transceivers
- 1-200 Channel Digital RNAV/DME Receiver
- 1-200 Channel Digital NAV Receiver
- 1-4096 Code Transponder
- 1-Digital Automatic Direction Finder
- 1-Audio Panel With Marker Beacon
- 1-VOR/ILS Indicator
- 1-VOR/LOC Indicator
- 1-DME Indicator
- 1-ADF Indicator

### Support Items

- Built-In Cassette Player
- 32-Station Navigation Memory Cassettes
- Digital Wind Velocity and Direction Control
- Digital Turbulence Control
- Simulator Hold Button
- Cassette Volume Control
- Engine Volume Control
- Flight Freeze Button
- Initializer Button
- Program Select Mode Control
- A-C Power Control

# We Build These Features Into Every Simulator

## Additional Standard Equipment And Optional Items

### Twin Engine Model 300X

#### Standard Equipment

- Engine Instruments and Controls
- Variable Pitch/Constant Speed/Full Feathering Propeller Controls
- One Local Area plus Two Additional Navigation Program Cassette
- Base with Rudders Attached
- Windshield Enclosure
- Visual Display
- Instructor's Console
- Navigation Plotter
- Choice of 3 Flight Instruction Courses (Private, Commercial, Instrument, Multi-Engine or Currency)
- \* Extended Warranty and Service
- \* Installation and Training

#### Optional Items

- Taped Flight Instruction Courses (Private, Commercial, Instrument, Multi-Engine and Currency)
- Additional Navigation Program Cassettes

### Single Engine Model 201X

#### Standard Equipment

- Engine Instruments and Controls
- Variable Pitch/Constant Speed Propeller Control
- Carburetor Heat Control
- One Local Area Navigation Program Cassette
- \* Warranty and Service

#### Optional Items

- Base
- Floor Mounted Rudders
- Windshield Enclosure
- Taped Flight Instruction Courses (Private, Commercial, Instrument, Multi-Engine and Currency)
- Installation and Training
- Additional Navigation Program Cassettes

### Twin Engine Model 300

#### Standard Equipment

- Engine Instruments and Controls
- Variable Pitch/Constant Speed/Full Feathering Propeller Controls
- One Local Area Navigation Program Cassette
- Choice of one Taped Flight Instruction Course (Private, Commercial, Instrument, Multi-Engine and Currency)
- Rudders
- \* Warranty and Service
- \* Installation and Training

#### Optional Items

- Base
- Windshield Enclosure
- Taped Flight Instruction Courses (Private, Commercial, Instrument, Multi-Engine and Currency)
- Installation and Training
- Additional Program Cassettes

### Single Engine Model 201

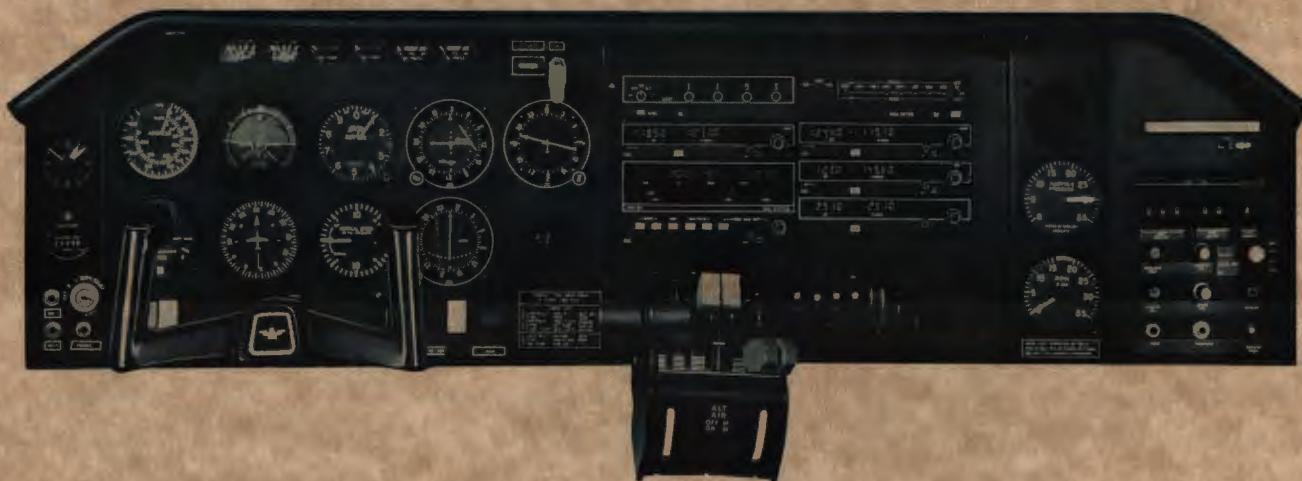
#### Standard Equipment

- Engine Instruments and Controls
- Variable Pitch/Constant Speed Propeller Control
- Carburetor Heat Control
- One Local Area Navigation Program Cassette
- \* Warranty and Service

#### Optional Items

- Base
- Floor Mounted Rudders
- Windshield Enclosure
- Taped Flight Instruction Courses (Private, Commercial, Instrument, Multi-Engine and Currency)
- Installation and Training
- Additional Navigation Program Cassettes

\*See Price Sheet for Details



## A Word About AST

Aviation Simulation Technology is a fast growing company that is devoted to building realistic flight simulators through the application of the most advanced technology available. Our goals, as a company, are motivated by a desire to bring pilots, at all levels, the same advantages of simulator training that until now were only available at prices well beyond the reach of most individuals and even some of the larger flight training organizations.

At AST, we believe that the effectiveness of a training system can only be measured in terms of how it performs and how useful it is to you. So when we designed the line of flight simulators you have been reading about, we decided that whatever else it was, the simulator had to be responsive to the needs of a broad range of people, from students to highly qualified and rated pilots. We felt that it had to look, feel and act like an airplane. That meant that it had to provide correct instrument response times...that it had to accurately simulate stick pressures and control surface responses...and that it had to behave just the way a light aircraft does so that the pilot would feel at home when transferring between his airplane and his simulator.

In building our units, we have used only the finest quality components. Our indicators are manufactured by a leading producer of aircraft instruments and our integrated circuits come from the world's largest IC manufacturer. Our motors all have the highest precision movement. Every component in an AST Simulator is

subjected to a rigorous process of inspection. As each simulator comes off the production line, it undergoes severe environmental and temperature tests to guarantee its reliability. Our units are extremely rugged, yet they are light in weight to afford maximum portability (the 301X weighs only 90 pounds). Furthermore, we back each and every one of them with the most extensive installation, service and warranty policies.\*

In order to achieve these objectives, we are proud to say that we have selected the finest pilot-engineer research team in the country and we believe that they have exceeded the demands of their challenge. This sense of pride, however, goes beyond what one would expect to feel even from a job well done. We believe that we have a commitment to an industry that we have been associated with for nearly all of our lives. This industry has been good to us as individuals and, because of that, we are vitally interested in making a contribution to it that will help it continue to prosper. At AST, we build only flight simulators and nothing else. We're not part of a far flung conglomerate...and we're not involved in any other ventures that are apt to drain our resources and commitment away from the goals we have set for ourselves. We believe that our simulators will usher in a new generation of flight training and we'd like to invite you to test fly one of them, at no obligation, so that you can see for yourself why we feel as confident as we do.

\*See price list for details.



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